

Appendix
COPY OF THE CLAIMS

1. (original) A polishing method comprising the steps of:

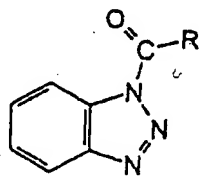
forming a layer made of material containing a metal as a main component over a substrate having recessed portions on a surface thereof so as to fill said recessed portions with said metal layer; and

5 polishing said metal layer by a chemical mechanical polishing method using a slurry including a polishing agent containing

a chemical agent being responsible for forming a protective film on the surface of said metal layer by reacting with said material containing a metal as a main component, wherein said chemical agent includes at least a carbonyl derivative of benzotriazole, and

10 an etching agent being responsible for etching said material containing a metal as a main component.

2. (original) The method of claim 1, wherein said carbonyl derivative of benzotriazole has the formula



where R is selected from the group consisting of - CH₃ (methyl), - CH₂CH₃ (ethyl), - CH₂CH₂CH₃ (propyl), - CH₂CH₂CH₂CH₃ (n-butyl), - C(CH₃)₃ (tert-butyl), p-tolyl, 1 – Benzotriazolyl – 1 – butamido, 2 – pyridyl, 3 – pyridyl, 4 – pyridyl, 2 – thiophenyl, and 3 – thiophenyl.

3. (original) The method of claim 1, wherein said etching agent includes an oxidizer; an acid or base; and a buffering agent or organic amine.

4. (previously amended) The method of claim 1, wherein said etching agent includes an oxidizer selected from the group consisting of H₂O₂, KIO₃, and Fe³⁺; an acid or base of HF or (CH₃)N(OH); and a buffering agent or organic amine selected from the group consisting of NH₄(CH₃CO₂), alkanol amine, and amino acid.

5. (previously amended) The method of claim 1, wherein said carbonyl derivative of benzotriazole comprises from about 0.0001 to 10 weight% of said polishing agent.

6. (previously amended) The method of claim 1, wherein said carbonyl derivative of benzotriazole comprises from about 0.01 to 5.00 weight% of said slurry.

7. (previously amended) The method of claim 1, wherein said metal is selected from the group consisting of Cu, a Cu alloy, Al, and an Al alloy.

8. (previously amended) A polishing method comprising the steps of:

forming a film made of material containing a metal as a main component over a substrate having recessed portions on a surface thereof so as to fill said recessed portions with said film; and

5 polishing said film by a chemical mechanical polishing method using a slurry including a polishing agent containing

a chemical agent being responsible for forming a protective film on the surface of said film by reacting with said material containing a metal as a main component, and

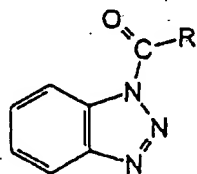
10 an etching agent being responsible for etching said material

containing a metal as a main component;

thereby forming a conductive film in said recessed portions,

wherein said metal is Cu or a Cu alloy and said chemical agent includes at least a carbonyl derivative of benzotriazole.

9. (original) The method of claim 8, wherein said carbonyl derivative of benzotriazole has the formula



where R is selected from the group consisting of - CH₃ (methyl), - CH₂CH₃ (ethyl), - CH₂CH₂CH₃ (propyl), - CH₂CH₂CH₂CH₃ (n-butyl), - C(CH₃)₃ (tert-butyl), p-

tolyl, 1 – Benzotriazolyl – 1 – butamido, 2 – pyridyl, 3 – pyridyl, 4 – pyridyl, 2 – thiophenyl, and 3 – thiophenyl.

10. (original) The method of claim 8, wherein said etching agent includes an oxidizer; an acid or base; and a buffering agent or organic amine.

11. (previously amended) The method of claim 8, wherein said etching agent includes an oxidizer selected from the group consisting of H_2O_2 , KIO_3 , and Fe^{3+} ; an acid or base of HF or $(\text{CH}_3)_3\text{N}(\text{OH})$; and a buffering agent or organic amine selected from the group consisting of $\text{NH}_4(\text{CH}_3\text{CO}_2)$, alkanol amine, and amino acid.

12. (previously amended) The method of claim 8, wherein said carbonyl derivative of benzotriazole comprises from about 0.0001 to 10 weight% of said slurry.

13. (previously amended) The method of claim 8, wherein said carbonyl derivative of benzotriazole comprises from about 0.01 to 5.00 weight% of said slurry.

14. (previously amended) A polishing method comprising the steps of:

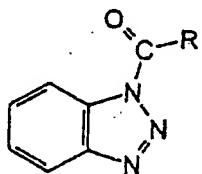
forming a film made of material containing a metal as a main component over a substrate having recessed portions on a surface thereof so as to fill said recessed portions with said film; and

5 polishing said film by a chemical mechanical polishing method using a slurry including a polishing agent containing

a chemical agent being responsible for forming a protective film on the surface of said film by reacting with said material containing a metal as a main component, and

- 10 an etching agent being responsible for etching said material containing a metal as a main component;
thereby forming a conductive film in said recessed portions,
wherein said metal is Cu or a Cu alloy and said chemical agent includes at least a carbonyl derivative of benzotriazole having the formula

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- 20 where R is selected from the group consisting of - CH₃ (methyl), - CH₂CH₃ (ethyl), - CH₂CH₂CH₃ (propyl), - CH₂CH₂CH₂CH₃ (n-butyl), - C(CH₃)₃ (tert-butyl), p-tolyl, 1 - Benzotriazolyl - 1 - butamido, 2 - pyridyl, 3 - pyridyl, 4 - pyridyl, 2 - thiophenyl, and 3 - thiophenyl.

15. (original) The method of claim 14, wherein said etching agent includes an oxidizer; an acid or base; and a buffering agent or organic amine.

16. (previously amended) The method of claim 14, wherein said etching agent includes an oxidizer selected from the group consisting of H₂O₂, KIO₃, and Fe³⁺; an

acid or base of HF or $(\text{CH}_3)_3\text{N}(\text{OH})$; and a buffering agent or organic amine selected from the group consisting of $\text{NH}_4(\text{CH}_3\text{CO}_2)$, alkanol amine, and amino acid.

17. (previously amended) The method of claim 14, wherein said carbonyl derivative of benzotriazole comprises from about 0.0001 to 10 weight% of said slurry.

18. (previously amended) The method of claim 14, wherein said carbonyl derivative of benzotriazole comprises from about 0.01 to 5.00 weight% of said slurry.